

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**ORDER NO. R2-2003-0008
NPDES PERMIT NO. CA0037699**

**AMENDMENT OF WASTE DISCHARGE REQUIREMENTS, ORDER NO. 00-026, FOR:
VALLEJO SANITATION AND FLOOD CONTROL DISTRICT, SOLANO COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. On April 19, 2000, the Board adopted Order No. 00-026, to reissue NPDES permit for the Vallejo Sanitation and Flood Control District (hereinafter the discharger).

Discharge Description

2. *Discharge Facility.* The discharger owns and operates the Vallejo Sanitation and Flood Control District Wastewater Treatment Plant, located at 450 Ryder Street, Vallejo, Solano County, California (see **Attachment A: Site Location Map**). The plant provides secondary level treatment of wastewater from domestic and commercial sources within the City of Vallejo, a small amount of adjacent unincorporated area, and the former Mare Island Naval Facility. The discharger's service area has a present population of about 115,000. The plant has an average dry weather design capacity of 15.5 million gallons per day (mgd), and a wet weather capacity of 30 mgd for full secondary treatment with an additional 30 mgd capacity for primary treatment. The total maximum wet weather daily plant flow is 37 million gallons.
3. *Discharge Locations.* Treated wastewater is discharged to waters of Carquinez Strait (CS) all year round through a submerged outfall in the vicinity of the north end of the Carquinez Bridge. The discharge receives a receiving water to effluent initial dilution of at least 10:1, and is classified by the Board as a deepwater discharge. During wet weather, secondary treated wastewater is also discharged intermittently to the waters of Mare Island Strait through a submerged outfall in the vicinity of the west end of Ryder Street, Vallejo. This discharge is expected to receive an effluent to receiving water initial dilution of at least 10:1. This discharge occurs only intermittently during the wet weather season.

Wet Weather Overflow Study Background

4. In 1988, the discharger initiated a program to manage their Sanitary Sewer Overflows (SSOs) in a cost-effective manner to protect public health and water quality. The 1988 program was based on the SSO analysis standards at that time and utilized a design storm approach. A design storm approach is based on the amount of rainfall occurring over a period of time. The design method has been modified by new standards, which apply the design event approach. A design event approach is based on estimating the number of overflows likely to occur over a period of time when taking into account factors affecting Inflow and Infiltration (I/I) (such as rainfall, pipe condition, groundwater saturation, etc.).

5. The discharger accelerated SSO control in 1999, the new effort is called the SSO Elimination Program (SSOEP). The October 2000 report entitled Engineering Feasibility Study for Sanitary Sewer Overflow Elimination Program (October 2000 Study), describes various alternatives considered for eliminating the discharger's SSOs in a manner that is both cost-effective and protective of water quality.
6. The Executive Officer approved the October 2000 Study and concurred with the conclusion that the 5-year conveyance and treatment is the cost-effective alternative to meet the minimum level of protection for water quality and beneficial uses.

Purpose of Order

7. The purpose of this amendment is two-fold. The first purpose is to incorporate the results of the October 2000 Study into Order No. 00-026; and the second purpose is to ensure continued progress in addressing the SSOs.

Basis of Order

8. The Board has the authority to modify this NPDES permit pursuant to Porter-Cologne Water Quality Control Act (California Water Code), Section 13263 (e), which provides authority to the Board on its own motion to review and revise permit requirements. When, as here, a permit is modified (as opposed to revoked and re-issued), only the conditions subject to modification are re-opened.

CEQA and Public Notice of Action

9. This Order serves as an amendment to NPDES Permit No. CA0037699, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.
10. The discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations. Board's responses to comments are hereby incorporated by reference.
11. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the discharger shall comply with Order No. 00-026 as amended. To distinguish the original language contained in Order No. 00-026 from this Order, all the amendments are highlighted by underline for additions and ~~strike through~~ for deletions, except for those specified as "Replace" or "Remove".

1. Replace Finding 12 with the following:

12. *Design Basis of Wet Weather Facilities*

- a. *Previous Wet Weather Design Criteria.* The discharger's current wet weather treatment facilities and collection system improvements are based on wet weather design criteria. These criteria were defined in the discharger's 1987 *Sewer System Evaluation Survey (1987 SSES)*. These criteria included a design storm event, projected wastewater flows associated with the design

storm event and background conditions such as service area, population served, infrastructure and environmental conditions. The design storm event was identified in the 1987 SSES as a single storm during a 24-hour period consisting of 1.6 inches of rainfall in a four-hour period with saturated soil conditions, resulting in flow amounts as shown in Table 1 in Attachment C (of Order No. 00-026).

Design wet weather flows were identified in the 1987 SSES, based on a projected wet weather flow of 75 mgd and elimination of 15 mgd of Infiltration and Inflow (I/I) flows through collection system improvements.

- b. *Current Wet Weather Design Criteria and Facility Improvements Program.* In 1999-2000, to comply with Board requirements, the discharger evaluated existing facilities and developed plans to reduce and control wet weather overflows. In 2000, the discharger set forth a program of cost-effective treatment and collection system improvements, based on the current wet weather design criteria. This program is described in the discharger's October 2000 Engineering Feasibility Study for Sanitary Sewer Overflow Elimination Program (October 2000 Study). Development of this program included consideration of the previous wet weather criteria, the Board's wet weather overflow control strategy, cost-effective evaluations, and consultations with Board staff. The proposed criteria and program would provide conveyance and treatment of flows for at least a 5-year design event (definition per Study).

The Executive Officer approved the October 2000 Study and concurred with the conclusions from the report that state that the 5-year conveyance and treatment alternative is cost-effective to meet the minimum level of protection for water quality and beneficial uses as prescribed in the San Francisco Bay Basin Plan. This approval may need to be reviewed and superseded after the U.S.EPA promulgates new SSO regulations.

- c. *Alternative Analysis.*

The October 2000 Study describes a variety of SSO elimination alternatives to meet the discharger's goals. The process for considering these alternatives included review by the discharger, a Technical Advisory Committee (TAC), and a Citizens Advisory Committee (CAC). The list of alternatives which could be applied on a large scale were reduced to thirteen (13) alternatives through this process. These alternatives consisted of a combination of improvements resulting in inflow and infiltration (I/I) reduction, better conveyance, storage, a high-rate treatment (advanced primary treatment), and wastewater treatment plant upgrades including an additional primary clarifier. The discharger, TAC and CAC, then undertook a second level of screening that reduced the number of alternatives to four to be carried forward into the EIR process. These programs include a "no-project" alternative (complete the 1992 Inflow/Infiltration Correction Plan), a 5-year conveyance/5-year treatment alternative that maximizes I/I rehabilitation, a 20-year conveyance/5-year treatment alternative that combines I/I and high-rate treatment, and a 20-year conveyance/20-year treatment alternative that combines maximizing conveyance with high-rate treatment. For all of the alternatives, range of costs, expected effectiveness, and the reliability of each program element were estimated.

The October 2000 Study discusses the comparison of the four programs based on cost, reduction of SSOs, and removal of pollutants. It was found that the incremental water quality benefits did not justify the incremental cost of upgrades to the wastewater treatment plant to accommodate increased conveyed wet weather flows from 20-year events (20-year conveyance/20-year treatment). The October 2000 Study concludes that protection to the 5-year event (5-year

conveyance/5-year treatment) is the most cost-effective level of performance to meet water quality objectives. Because of the continuous simulation modeling used to derive the various alternatives, the 5-year flow event described in the report is actually a larger volume of water than the 5-year rainfall event described in the discharger's previous permit or in previous collection system studies. Therefore, the 5-year conveyance/5-year treatment alternatives described in the October 2000 Study will result in a higher level of protection than it would have formerly under the older modeling scenario. For purposes of this permit, these criteria are the current applicable design criteria for the discharger's wet weather flow management program.

2. Revise Finding 13.a to read as follows:

13. *Wet Weather Treatment Facilities*

- a. *Facilities.* In 1991, the discharger completed construction of wet weather treatment facilities to handle peak hour wet weather flows of about 60 mgd and a total daily plant flow of 37 million gallons. The all-season secondary level treatment plant has a wet weather treatment capacity of 30 mgd. The wet weather treatment facilities supplement the all-season treatment plant, by providing primary treatment, disinfection and dechlorination for flows in excess of 30 mgd, up to 60 mgd. The wet weather treatment facilities include additional influent pumping, screening, grit removal, primary sedimentation, disinfection (~~chlorination~~), ~~dechlorination~~, effluent pumping and flow routing, and the Ryder Street Wet Weather outfall (RSWW outfall).

3. Replace Finding 15.a and b to read as follows:

15. *Infiltration/Inflow Correction and Collection System Improvement Program.*

- a. *Previous Collection System Improvement Program.* The discharger has an on-going program of collection system improvements to reduce excessive infiltration and inflow (I/I) and increase the collection system capacity in order to contain and convey design wet weather flows. The discharger's 1987 and 1988 Sanitary Sewer Evaluation Survey (SSES) and 1987 Master Plan were the basis for an initial program of cost-effective I/I corrections. Most of the major projects identified in the initial program have been completed (see sections c. and d. below).

In 1992 the discharger completed a *Wastewater Facilities Master Plan 1992 Interim Update (1992 Interim Plan)* which included an updated program of collection system improvements. In 1997, the discharger initiated further review of its program to evaluate the success of projects completed to date and more clearly identify necessary future programs. This planning effort has resulted in a document titled *1997 Wastewater Facilities Master Plan/Action Plan (1997 Master Plan, February 4, 1998)*. The 1997 Master Plan identifies ongoing programs of collection system improvements including flow monitoring, performance evaluation and capital improvement projects.

The two milestones identified as Northern and Southern Basin Storm Basin Water Inflow reduction measures in the 1992 Inflow/Infiltration Correction Plan shall coincide with a permitted increase in treatment capacity of one mgd for each milestone. The discharger has completed both the reduction measures. Therefore, an increase in permitted flow from 12.5 to 14.5 mgd has been granted.

- b. *Updated Collection System Improvement Program.* Ongoing I/I source detection and collection system evaluations have allowed for refinement of the I/I correction program. In 2000, the discharger completed the October 2000 Study. The objective of the October 2000 Study is to reduce I/I and control wet weather overflows by providing adequate and reliable collection and

transport of wastewater flows in accordance with wet weather design criteria. The phased efforts specified in the October 2000 Study supercede the District-wide sewer rehabilitation project defined in the 1988/1992 SSES. Currently, the discharger has completed and is working on all of the Phase I projects, including the Phase I pilot rehabilitation program of the collection system (10/00-04/02), the construction of 3-million gallon storage at Sears Point Pump Station (1/01-6/03), conveyance improvement project at several bottleneck locations(1/01-10/03), and construction of plant clarifiers/improvements (1/01-2/03). To evaluate the effectiveness of the Phase I pilot rehabilitation program, the discharger will perform additional monitoring and cost-effective analysis to determine the direction for future SSOEP efforts (see **Attachment B: Updated 2002 Guide for 5-Year Performance Level SSOEP CIP**).

4. Revise Finding 15.d to read as follows:

- d. *Sears Point Pump Station Collection System (SPPS)*. The collection system in the vicinity of the SPPS has been identified by the discharger's collection system programs to be in need of improvements. The improvements are necessary to provide adequate flow capacity during wet weather conditions as well as to realign certain existing pipelines in association with the Highway 37 reconstruction projects. In anticipation of the Highway 37 Project, the discharger has almost completed the new Highway 37 pipeline across White Slough to the Sears Point Pump Station. The construction is about 95% complete and the pipeline is now operational. Given the current understanding that the Highway 37 project will be initiated by the State (Cal Trans) by the year 2000, it is anticipated that the collection system improvements in the vicinity of the SPPS will be completed by 2001, or shortly thereafter. Improvements identified in the 1987 Master Plan have not yet all been completed. At present, as identified in the draft 1997 *Master Plan*, the discharger is proposing to reevaluate collection system capacities and necessary improvements through a program of additional flow monitoring and modeling based on current operating conditions including operation of the new SPPS, as well as the wet weather design criteria and program objectives. Identified improvements will be implemented in accordance with the discharger's collection system improvements program and requirements of Order No. 00-026 as amended.

5. Revise Finding 16 in part to read as follows:

16. *Wet Weather Overflows*. Upon completion of the improvements identified in the March 2001 Capital Improvement Program (CIP) which was part of the October 2000 Study (see Attachment B and C: SSOEP CIP Schedule), the The discharger's wet weather treatment facilities, I/I correction projects and collection system improvements are intended to contain and treat peak day wet weather design flows of 60 mgd. When wet weather flows exceed the design flow, overflows of storm water-diluted raw sewage may occur. The major known points of overflow are as follows:

6. Revise Finding 19 to read as follows:

19. *Wet Weather Flow Management Program*. The discharger's program for managing wet weather flows and controlling overflows, described in Findings 13 through ~~18~~ 19 above, includes the wet weather treatment facilities completed in 1991, provision for emergency stand-by power for the entire secondary treatment process, the split flow discharge process for wet weather discharges of treated effluent, operation of the Sears Point Pump Station Overflow facility, and the ongoing October 2000 Study CIP SSOEP program for wastewater treatment improvements and collection

system improvements to reduce inflow/infiltration and minimize raw sewage overflows. The discharger has prepared a Wet Weather Facilities Operation Plan. This plan describes operation and maintenance procedures for existing collection system, treatment and discharge facilities, and planned improvement projects and programs that are collectively intended to control wet weather overflows. This Order requires continued implementation of this ~~program~~ SSOEP CIP, and its Wet Weather Facilities Operation Plan that will be used to assess compliance with the requirements of Order No. 00-026.

7. Replace Finding 20 to read as follows:

20. 40 CFR 122.41(m)(4), Prohibition of Bypass, in which bypass is defined as "intentional diversion of waste streams from any portion of a treatment facility", states three exceptions to allow bypass. These exceptions are abbreviated as follows:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage.
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. ...
- (3) The permittee submitted notices as required under paragraph (m)(3) of this section.

Compliance with criteria (1) and (3) will be determined on a case-by-case basis.

The discharger's treatment plant can provide 30 mgd full secondary treatment during wet weather, and an additional 30 mgd capacity for primary treatment. To prevent bypass caused by excessive I/I captured by the collection system and then conveyed to the treatment plant during the wet season, the discharger is now constructing a 3-million gallon storage tank at the Sears Point Pump Station. This additional storage in conjunction with the District's additional SSOEP elements will even out the peak hour wet weather flows and prevent the occurrence of bypass for flows less than the 5-year flow event. Therefore, the discharger is eligible for an exception under criterion (2).

8. Revise Discharge Prohibition A.3 to read as follows:

3. The bypass or overflow of untreated or partially treated wastewater to waters of the State, in violation with the Basin Plan, either at the treatment plant or from the collection system or pump stations tributary to the treatment plant, is prohibited, except as provided for bypasses under the conditions stated in 40 CFR 122.41 (m)(4) ~~and (n)~~, and so long as the discharger is proceeding in accordance with permit Provisions E.5 and E.6, and the blended effluent complies with effluent and receiving water limits.

9. Replace Provision E.5 with the following:

5. Sanitary Sewer Overflow Elimination Program (SSOEP) and Schedule.

The discharger shall continue to proceed to implement, consistent with the Basin Plan, its 5-year performance level CIP, and its Wet Weather Facilities Operation Plan in accordance with the discharger's October 2000 Study, as outlined in Attachment B. When the discharger has completed the Phase I Improvements shown on Attachment B which include: construction of the plant clarifier and associated improvements, the construction of 3.0 million gallons of storage

facilities in the vicinity of Sears Point Pump Station, and the increase of conveyance capacity in the area of Pepper Drive, Mariposa St, and the Southern Interceptor at Fifth Street near Sonoma Boulevard in the Vallejo area, the permitted dry weather flow capacity shall be increased by one mgd to a total of 15.5 mgd.

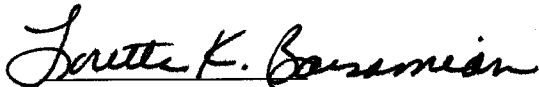
Construction of the Phase I Improvements will provide an equivalent level of protection to the original 5-year design storm. The original 5-year design storm is equivalent to the 1-year overflow event when using the continuous simulation modeling approach employed in the October 2000 Study. The Phase I conveyance improvements are the bottlenecks in the collection system for the 1-year overflow event. The Phase I storage capacity proposed at SPPS (3.0 million gallons) would have contained the historic maximum overflows at the current SPPS (800,000 gallons in Feb 1999). The Phase I Improvements are scheduled for completion by December 2003. Attachment C depicts the SSOEP CIP schedule.

The monthly Self-Monitoring Reports submitted to the Executive Officer shall include a schedule report regarding the Study that is current to 15 days prior to the report date.

Order Expiration

This Order becomes effective on February 1, 2003 and expires on April 19, 2005. The discharger must file a Report of Waste Discharge in accordance with Title 23 of the California Administrative Code no later than 180 days before this expiration date as application for reissuance of waste discharge requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on January 22, 2003.


Loretta K. Barsamian
Executive Officer

ATTACHMENT

- A. Site Location Map
- B. Updated 2002 Guide for 5-Year Performance Level SSOEP CIP
- C. SSOEP CIP Schedule

Attachment A

Site Location Map

To Napa

To Sacramento



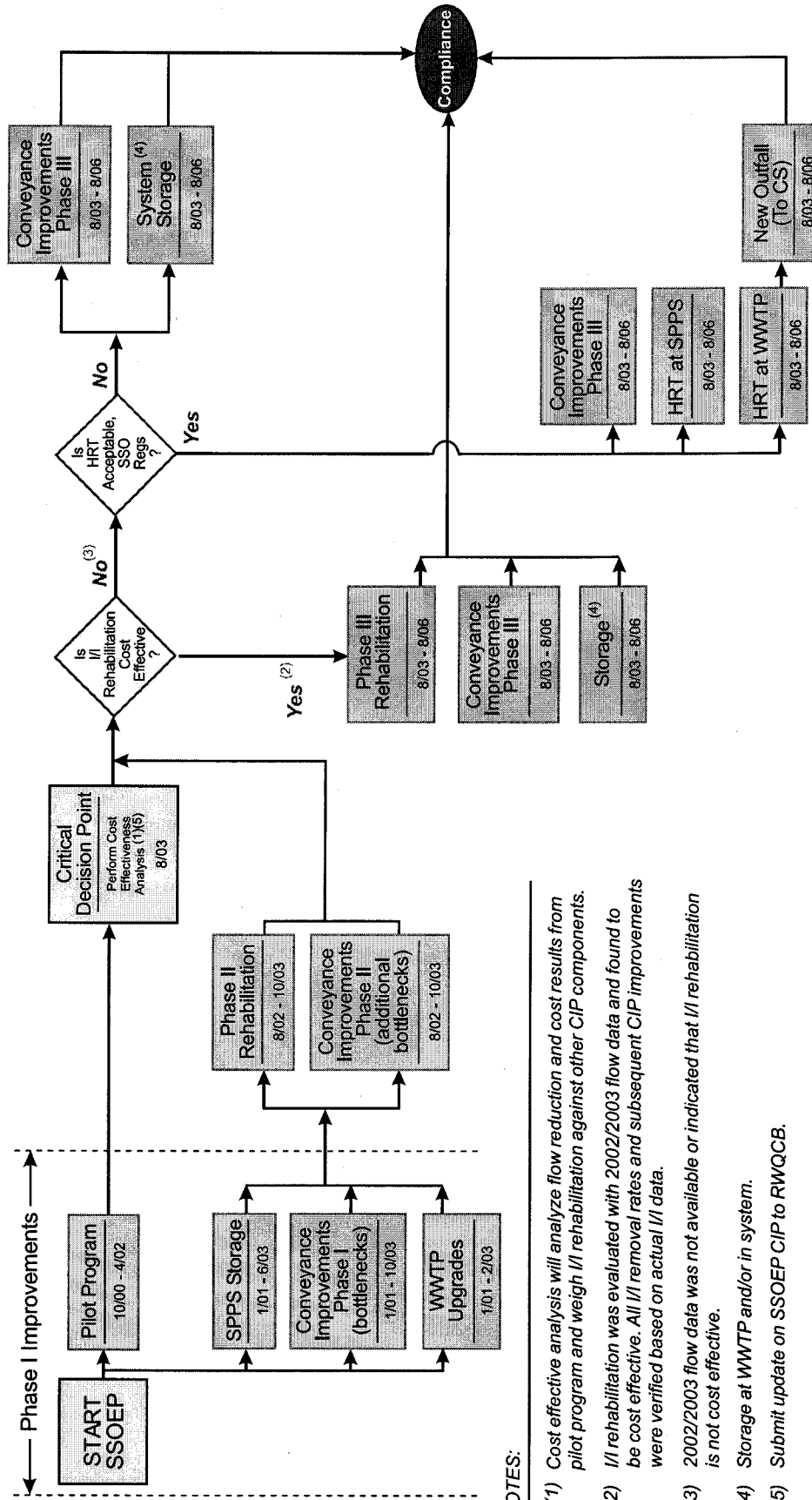
To Oakland & San Francisco

Deep Water Outfall 
Carquinez Strait

Attachment A
VALLEJO SANITATION AND
FLOOD CONTROL DISTRICT

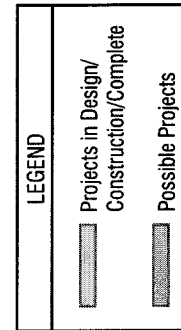
Attachment B

Updated 2002 Guide for 5-Year Performance Level SSOEP CIP



NOTES:

- (1) Cost effective analysis will analyze flow reduction and cost results from pilot program and weigh I/I rehabilitation against other CIP components.
- (2) I/I rehabilitation was evaluated with 2002/2003 flow data and found to be cost effective. All I/I removal rates and subsequent CIP improvements were verified based on actual I/I data.
- (3) 2002/2003 flow data was not available or indicated that I/I rehabilitation is not cost effective.
- (4) Storage at WWTP and/or in system.
- (5) Submit update on SSOEP CIP to RWQCB.

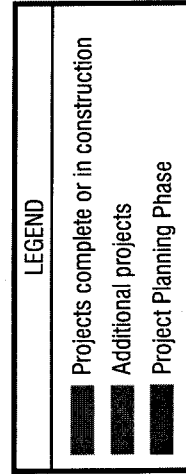
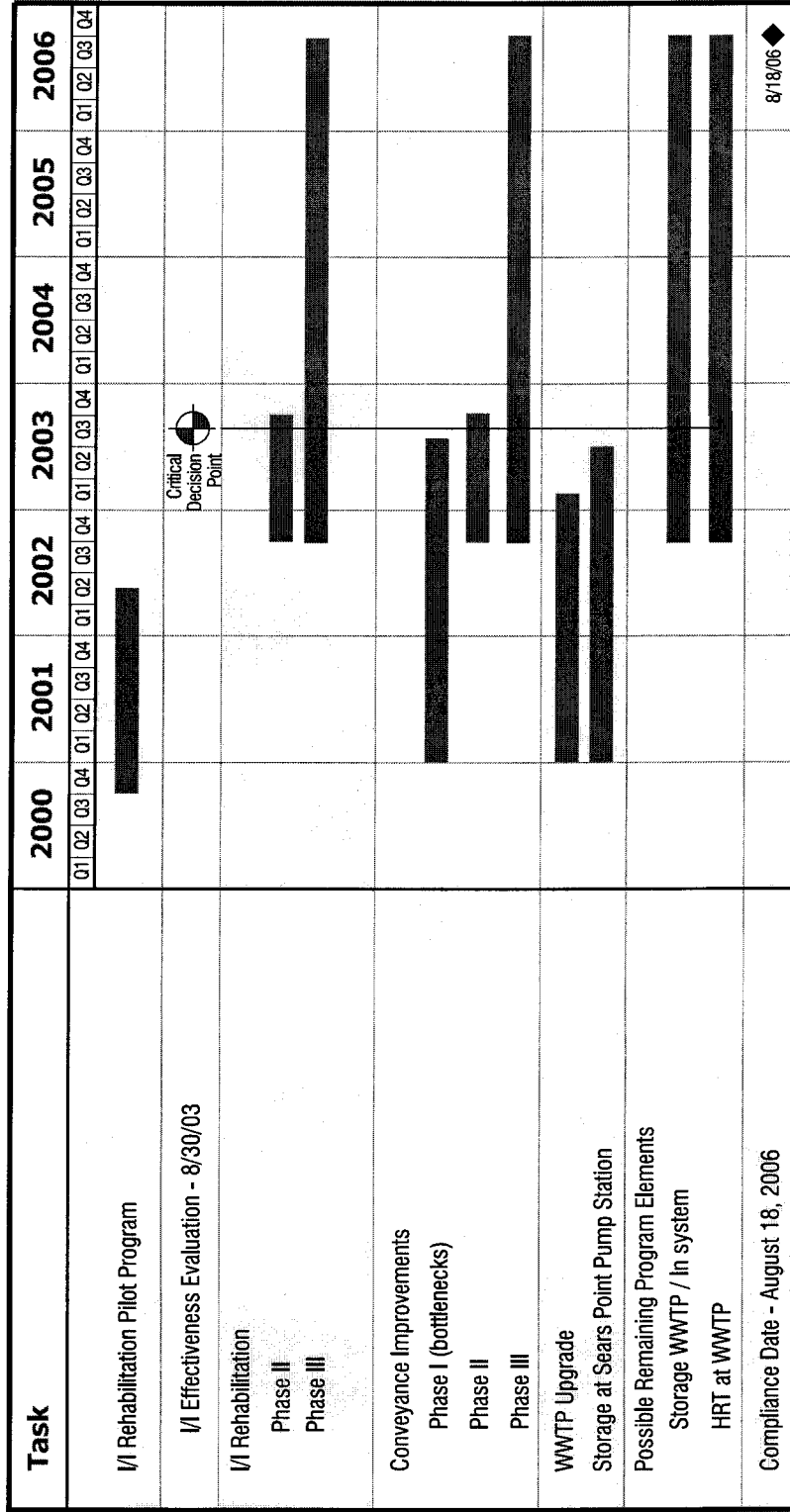


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engineers

Attachment B UPDATED 2002 GUIDE FOR 5-YEAR PERFORMANCE LEVEL SSOEP CIP VALLEJO SANITATION AND FLOOD CONTROL DISTRICT

Attachment C

SSOEP CIP Schedule



ATTACHMENT C
SSOEP CIP SCHEDULE
VALLEJO SANITATION AND
FLOOD CONTROL DISTRICT